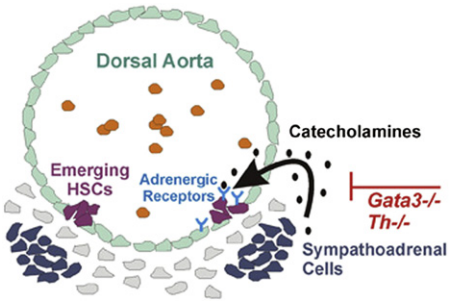
Cell Stem Cell

In This Issue



Direct Reprogramming of Brain Pericytes to Neurons

KAROW ET AL., PAGE 471

Reprogramming of adult human brain pericytes to neuronal cells suggests a potential starting population for direct conversion in situ.

Esrrb Is a Key Player in the Pluripotency Network

FESTUCCIA ET AL., PAGE 477 AND MARTELLO ET AL., PAGE 491

Festuccia et al. report that the transcription factor Esrrb is a major functional downstream target of Nanog in the pluripotency network and can replace Nanog in both the maintenance of pluripotency and reprogramming. Martello et al. take a different approach to a similar question. They analyze functionally relevant targets downstream of GSK3 inhibition and Tcf3 and highlight the key role that the nuclear receptor Esrrb plays in the pluripotency network. Preview by Zwaka.

SSC Niche Reconstituted in Culture

KANATSU-SHINOHARA ET AL., PAGE 567

Coculture of spermatogonial stem cells with testis tissue reconstitutes the niche and highlights a key role for GDNF and CXCL12 in stem cell homing.

A Sympatico Relationship for Emerging HSCs and Nervous System Development

FITCH ET AL., PAGE 554

Catecholamines produced by the sympathetic nervous system regulate hematopoietic stem cell emergence during embryonic development. HSCs, which express adrenergic receptors, require catecholamine secretion from sympathoadrenal cells near the dorsal aorta. (Top image.)

Focus on Asymmetric Cell Division

Asymmetric Stem Cell Division: Precision for Robustness

INABA AND YAMASHITA, PAGE 461

This Review covers recent progress on asymmetric cell division and highlights four related research articles in this issue (see below). Here, Inaba and Yamashita also discuss conservation between stem and non-stem systems, molecular mechanisms, and biological functions.

Asymmetric Division of dsRNA-Binding Protein Staufen2 Controls NSC Fate

KUSEK ET AL., PAGE 505 AND VESSEY ET AL., PAGE 517

Stem cells divide asymmetrically to expand differentiating progeny while maintaining the stem cell pool. Kusek et al. show that an RNA granule containing Stau2 regulates balance of stem cell maintenance versus differentiation in radial glial precursors during cortical development. Similarly, Vessey et al. show that the RNA binding protein Stau2, together with its cargo mRNA, segregates asymmetrically in proliferating neuroblasts to regulate normal cortical development.

PARsing Out Asymmetric Stem Cell Division in the Gut

GOULAS ET AL., PAGE 529

The role of Par proteins in asymmetric cell division is extended to an adult stem cell lineage—the *Drosophila* intestinal stem cell—with integrins implicated in regulating Par asymmetry in this context.

Par3/p38α/β Is a Checkpoint for Asymmetric Satellite Cell Division

TROY ET AL., PAGE 541

Satellite cells activate p38α/β MAPK to divide asymmetrically in response to muscle injury. A Par3/PKC complex localizes and sequesters p38α/β MAPK in one of the daughter cells, which becomes a myoblast, while the other daughter cell returns to quiescence. (Bottom image.)